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ABSTRACT

Recent research indicated that a field dependent cognitive style, often culture-based, can cause problems for learners of English as a Second Language (ESL). English language ability and learning styles, and field dependence (FD), and field independence, were tested in 157 adult Korean and Japanese ESL learners in university and community-sponsored classes. More of the Koreans (72.5%) demonstrated FD than did the Japanese (20.8%). More of the community students (73.6%) are field dependent than are the university students (33.3%). More of those who have resided in the United States longer, primarily Korean immigrants, tend to be field dependent. Field independent correlated positively with English language ability and years of education. (Author)

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COGNITIVE STYLES OF KOREAN AND JAPANESE ADULTS LEARNING ENGLISH IN THE U.S.

by

Ruth Ellen Bean, B.A.

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MASTER OF ARTS IN TEACHING

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ABSTRACT

COGNITIVE STYLES OF KOREAN AND JAPANESE ADULTS
LEARNING ENGLISH IN THE U.S.

Recent research indicates that a field dependence (FD) cognitive style, often culture-based, can cause problems for learners of English as a Second Language. English language ability and learning styles, FD and field independence (FI), were tested for 157 adult Korean and Japanese ESL learners in university and community-sponsored classes. More of the Koreans (72.5%) demonstrated field dependence than did the Japanese (20.8%). More of the community students (73.6%) are FD than are the university students (33.3%). More of those who have resided in the U.S. longer, primarily Korean immigrants, tend to be FD. Field Independence correlated positively with English language ability and years of education. A regression analysis demonstrated that FI adds significantly to years of education and years of U.S. residence as predictors for English language ability, as measured by the Basic English Skills Test. Teaching strategies to promote the development of proficiency in English among FD learners are suggested.

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COGNITIVE STYLES OF KOREAN AND JAPANESE ADULTS LEARNING ENGLISH IN THE U.S.

CHAPTER 1

Introduction and Purpose of the Study

Introduction

Variances in child-rearing practices and degrees of socialization within a culture tend to produce individuals with different styles of learning (Witkin 1976, Ramirez and Castañada 1974, L. Hansen 1984, Ballard 1985, Hansen-Strain 1987). Highly social societies in which children are raised in an authoritarian, structured environment tend to produce more individuals who are field dependent, whereas industrialized societies that are comparatively relaxed and liberal in child-rearing practices tend to produce more individuals who are field independent (Witkin et al. 1971, Witkin and Goodenough 1981).

Definition of Terms

Field independence (FI) is defined as the ability to analyze, organize, or reorganize information and experience (Witkin and Goodenough 1981). This definition is evolving and changing as new studies add to the understanding of the concept.

Field Dependence (FD) and field independence are both measured on an 18-point graduated scale. Field dependence is denoted by the lower scores and is seen as an absence of field independence. However,

both should be considered a matter of degree, rather than absolutes. Additional research is necessary to refine the definition.

Community English classes for adult second language learners are classes sponsored by community organizations. These non-degree classes are usually given without charge; they are less formal than university classes and not as regularly attended.

Field Independence/Dependence

Field independence/dependence (F/D) is the most often researched of the cognitive style components. Other important elements affecting cognitive styles, besides cultural background, are tempo (reflective to impulsive) and aural or visual preference (Bowen, Madsen and Hilferty 1985). As many as 29 different cognitive style components have been identified. Every individual has a different cognitive style "map" (Brown 1987).

Three main factors are used to define intelligence. "Verbal-comprehension" and "attention-concentration" are two of these (Witkin et al. 1971); field independence is the third (Brown 1987). When first defined as a cognitive style, field independence was considered to be separate from intelligence per se (Witkin et al. 1977). Recent psychological research indicates that field-independent learners can verify necessary inferences faster when reading, have a larger working memory capacity (Cochran and Davis 1987), and can also be more accurate at recalling factual information from lectures (Frank 1984) and texts (Spiro and Tirre 1980).

Research in the 1980s has shown that field independence is positively correlated with second language acquisition for adults (Hansen and Stansfield 1981, d'Anglejan and Renaud 1981, Stansfield and Hansen 1983, Chapelle and Roberts 1986, Hansen-Strain 1987, Carter 1988). The emphases in previous research, however, have differed from those in this present study.

Most of the studies addressing FI/D and second language acquisition have been concerned with students involved in language study at institutions of higher education. One exception is a study of Canadian adult immigrants of varying ages and backgrounds, who were taking an intensive French course (d'Anglejan and Renaud 1981). This predictive study reported that students with greater degrees of field independence and more years of schooling were more likely to benefit from second language instruction.

Most of the research prior to this present study have not been concerned with specific cultural background influences on adult second language learners from another country who presently live in the United States. One exception is the study (Hansen-Strain 1987) of Asian and South Pacific island students in the English Language Institute at Brigham Young University-Hawaii Campus that reported a significant relationship of field independence with three "demographic" Pacific area backgrounds and with English language proficiency.

Statement of Purpose

Korean and Japanese adult students of English as a Second Language

(ESL) in Anchorage, Alaska, are enrolled in various community English instructional programs, as well as in ESL courses at Alaska Pacific University and the University of Alaska Anchorage. Korean students predominate. Teachers in these programs realize that cultural influences affect their students, as these teachers work with individuals who have different learning styles. These differences can create problems for students and teachers alike. Although Japan and Korea are both industrialized nations, industrialization in Korean is more recent and less extensive. Adult Koreans are more likely to have been reared in structured circumstances, with extended families and a high level of social control. The traditional Korean extended-family pattern is often maintained in immigrant families in the U.S. Families in Japan, on the other hand, tend to be more nuclear (limited to parents and children). As Korea becomes even more industrialized, it could be anticipated that Korean families will also tend more towards the nuclear family pattern.

Cultural influences are evident when intelligent ESL students have difficulty sorting out the components necessary for grammatical construction and seem lost when inferences are necessary to understand written material. They are confused by the various parts of an English sentence, especially when confronted with different forms of a vocabulary word. These students often attend every class and diligently do their homework. They demonstrate possible field dependence, or a lack of field independence.

The purpose of this research is to define the learning styles of Korean and Japanese adult students of English as a Second Language in Anchorage,

Alaska, to correlate their cognitive styles with their English language ability, and to recommend teaching strategies from the research literature to help field-dependent adults learn more effectively.

Research Questions

It would be useful for adult educators to determine where adult Korean and Japanese ESL students, both university and community, fit on the field independence/dependence continuum. Is there a difference in the degree of FI/D of these Korean and Japanese students? Is there a difference between the FI/D of university students and community students? Are there relationships between field independence and culture, age, years of education, and years of U.S. residence. If so, what is the extent of these relationships? Is there a relationship between FI and English language ability for these adult ESL students? Are years of U.S. residence related to English language ability? If there are relationships, are they significant? How do all of these variables (field independence, age, years of education, and years of U.S. residence) rank as predictors of English language ability, and what are the strengths of these predictors? This study addresses these questions.

Research Hypothesis

The research hypothesis for this study has five components: (1) there is a significant difference in the field independence/ dependence of adult Korean and Japanese ESL learners; (2) there is also a significant difference in FI/D between university and community adult ESL Korean and Japanese students;

(3) there are significant correlations between field independence and age, years of education, years of U.S. residence, and English language ability for these students; (4) the relationship of cognitive style to years of residence in the U.S. could indicate that those who are field dependent when coming to the U.S. probably do not change their learning style over time; and (5) years of education, field independence, years of U.S. residence and age are predictors for the criterion of English language ability.

Significance of the Study

As students and ESL teachers become aware of individual differences in learning styles and their implications, instructional methods can be designed to help accommodate these differences. This study includes instructional methods suggested or implied by studies in the review of the literature. This work brings together the research of the 1980s for field independence/dependence and second language acquisition. It also explores the learning styles of adult foreign-born ESL students in community classes, an area of investigation for which no previous research was found.

If there is an inverse relationship between age and field independence in ESL learners, programs can be specifically designed to help older students. If there is a relationship between field independence and formal schooling, more realistic goals for field-dependent ESL university students with less education could be established. If adult immigrants to the U.S. attending community ESL classes tend to be primarily field dependent, specific teaching methods could

be used to help those students learn more effectively.

Assumptions

Personal experience and interviews with the teachers of the ESL classes tested in this study have verified that some learners of English as a Second Language in the U.S. have more difficulty than others, regardless of the efforts of student and teacher. D'Anglejan and Renaud (1981) reported that, of the adult immigrants enrolled in a seven-month course in French, "some 15% to 20% appeared to learn very little." It is a reasonable assumption that some difficulties stemmed from student inability to utilize a learning style that facilitates formal learning, an ability that was not developed due to traditional cultural practices with these adults as children. The literature also indicates that field independence can be a predictor of second language learning ability (Chapelle and Roberts 1984, d'Anglejan and Renaud 1981), and that age and amount of education are also factors that can influence learning ability (d'Anglejan and Renaud 1981, Witkin et al. 1971). Research in field independence/ dependence seems to indicate that adults are not flexible in their cognitive styles and do not move from one learning style to another to meet their changing needs.

Limitations of the Study

This study has the limitations inherent in all correlational studies. It does not presume to indicate cause and effect with regard to background culture and ability to learn a second language or with regard to field independence and

ability to learn a second language. Only relationships have been explored. This study was limited to adult Korean students and adult Japanese students in the city of Anchorage, Alaska. It was not a study of the community programs nor the university programs per se; rather, it was a study of the students in those programs.

This study could not evaluate nor take into account the quantity or quality of instruction in English as a Second Language that each subject had experienced prior to taking the tests of English language ability that were used in the study.

Organization of the Study

Directors of community and university ESL programs and class instructors in those programs were contacted and their cooperation requested. The review of the literature was provided to those who wished to read it. The tests to be used for the study were examined by the instructors and directors and their opinions were sought concerning the value of the study and the appropriateness of the test instruments.

Four groups of students - Korean, Japanese, community and university - were identified for an analysis of their relative field independence/dependence. Four subgroups of students were also identified: Korean community, Japanese community, Korean university, and Japanese university. It was decided to form two age categories, two formal education categories, and two U.S. residence categories at the beginning of the statistical analysis, based on the median for

each of these variables.

The decision to collect data during two periods - spring and fall, 1989 - was made after the research was underway. Because of the static nature of field independence/dependence in adults, the inclusion of additional programs and subjects during the fall testing period enlarged the data base without contaminating the research.

CHAPTER 2

Review of the Literature

Field independence/dependence was identified and defined in 1962 by Herman A. Witkin and his associates (Witkin et al. 1977). Their research, starting in 1949, used such devices as the Rotating-Room Test, the Body-Adjustment Test, and the Rod-and-Frame Test, and determined a consistent difference in the way that individuals sort out their environments. Some people rely primarily on themselves while others are influenced more by their surroundings. At first it was thought that this difference existed only in relation to spatial-configurational material, but Witkin and his associates later discovered that the difference is also evident in intellectual functioning and perceptual activities.

Witkin and Goodenough (1981) called this intellectual function "cognitive restructuring," and they developed a paper and pencil test that replaced the manipulative devices of their initial research. The Embedded Figures Test (EFT) measures the ability to locate simple figures embedded in geometric designs. A children's version is called the CEFT. The Group Embedded Figures Test (GEFT), devised by Witkin, Oltman, Raskin, and Karp (1971), is used to determine field independence/dependence in individuals being tested in a group. The GEFT consists of 18 embedded figures. Scores are ordered on a continuum, with the higher scores indicating field independence and the lower scores denoting field dependence (Witkin and Goodenough 1981).

Field independence/dependence indicates cognitive style. In 1984 it was referred to as a "cognitive characteristic" (Chapelle & Roberts).

To quote Witkin (1979),

> We designate the tendency to rely on the self as a primary referent in information processing as a field-independent mode of functioning and the tendency to rely on external referents as a field-dependent mode of functioning. These tendencies find widespread expression in an individual's perceptual, intellectual, and social activities.

Field-dependent people perceive their environment globally or holistically; they see the whole picture, but often get lost in it because they have difficulty differentiating the important parts of their environment from the unimportant. They prefer to work with other people and depend on others for clues to help them structure and organize ambiguous situations. They frequently seek a physical closeness in social interaction, and they are often more demonstrative with their feelings than field-independent people. It is thought that field-dependent individuals develop a facility to get along with others, as a result of their dependency (Witkin et al. 1977).

Field-independent people, on the other hand, can give structure to unstructured material and can rely on themselves to select and organize items from the complex environment around them. A field-independent individual at the high end of the continuum is analytical, and can detect patterns and subpatterns. Field-independent people are thought to be less considerate and more manipulative, and more distant and cold in their social relations (Witkin

and Goodenough 1981).

The implications for education were summed up in the Review of Educational Research in 1977 (Witkin et al.). In this journal the investigators indicated four characteristics of FI/D cognitive styles. Cognitive styles (1) are concerned with individual differences in the way people learn, solve problems, and relate to others; (2) say something about personality, or the whole self, and can be assessed nonverbally; (3) tend to be stable over time; (4) and are bipolar in educational value. Witkin and his associates felt that either style of learning could be appropriate, depending upon the situation.

The summation stated that predominantly field-independent and field-dependent persons favor different learning methods. The researchers felt that some means could be found to help a field-dependent person learn to use a "hypothesis-testing approach." It appears that a caveat was already being added to their idea of "bipolar" styles.

In Cognitive Styles: Essence and Origins (1981), Witkin and Goodenough stated that the differences in the two styles extend to perceiving, organizing, analyzing and recalling information and experience. Research in 1967 had shown that field independence usually increases gradually through childhood, and then FI/D stabilizes at some time from mid-teens through early adulthood (Witkin et al. 1971).

Continuing research has determined that the extent of field dependence is related to the cultural rearing of the individual. Countries or societies with more relaxed child-rearing practices, like the U.S., tend to produce more field-

independent people. In contrast, countries or societies with strict child-rearing practices, highly socialized agricultural and/or authoritarian environments in which the child is controlled and pressured to conform, produce more field-dependent individuals (Witkin and Goodenough 1981).

In Cultural Democracy, Bicognitive Development and Education, Ramírez and Castañeda (1974) explored FI/D and its implications for Mexican American children. They discovered that children can be taught to use both styles of learning, and felt that "competent and effective functioning in both cognitive styles implies integration and equal development of the affective and cognitive domains." They claimed, however, that U.S. public schools emphasize the field-independent cognitive mode to the detriment of minority children; as a result, children whose primary language is Spanish are more likely to be field dependent. Their work included descriptive studies of field-dependent children whose characteristics match those observed by teachers of many adult students of English as a Second or Foreign Language.

By 1980 field independence had been far-better researched than field dependence. A 1981 bibliography of field independence listed several thousand studies (Cox and Gall). However, the influence of field independence on second language acquisition had not been well defined, particularly in the studies of the 1970s. Negative results were obtained by Bialystok and Frohlich (1977) in a study of the relationship of field independence to French reading comprehension. Their work involved 14- and 15-year-old students.

A study in 1976 (Tucker, Hamayan and Genesee) found that field

independence, grouped with ethnocentrism and French class anxiety, had some correlation with French spelling, listening comprehension and vocabulary proficiency in an overall test. They worked with students in grade seven, and did not find a correlation with other tests. Naiman et al. (1978) found a positive association with listening comprehension, elicited tasks, and field independence in grade twelve students. Their idea was that the entire language learning situation distracts field-dependent individuals, while field-independent people are more successful because they are able to separate the language elements to be learned from the total context.

Brown (1980) hypothesized that a field-independent style is more successful in the classroom and a field-dependent style is better suited to learning a language in the field. In a one-page review of FI/D, Damen (1987) claimed that it was still inconclusive whether one style is more helpful than another in second language learning. She stated that learners can switch styles and use the style appropriate for the situation. She did not document this statement. Research in the 1980s has not proved this to be true, particularly of adults.

Krashen (1981) conjectured that there may be a relationship between field independence and second language proficiency in older students, but not younger students. He referred to the positive findings of Naiman et al. (1978) with grade twelve students, and the negative findings of Bialystok and Frohlich (1977) and Tucker et al. (1976) with younger students. He also saw a connection between the more analytic field-independence style and the "left

brain" learning style.

Studies in the 1980s have been more conclusive. Research analyses have multiplied, building on previous work and adding to the body of information about field independence/ dependence and its relationship to second language learning. However, only five research studies which are described in this study deal specifically with learners of English as a Second Language (ESL), and only one of these studies reports research with adult subjects. Although not specifically researching second language learners, four studies of the 1980s reported FI/D research relevant to second language learning: Piotrowski (1984), Noble and Frank (1985), Moore (1985), and Cockran and Davis (1987). They precede the other studies discussed here.

A psychological review of technical studies of field independence/ dependence (Piotrowski 1984) examined research on the relationship between memory and FI/D. The results indicated that

> field independent individuals tend to engage in a hypothesis-testing, participant role in learning. They seem to function on intrinsic motivation and are perceptive of the nonsalient cues in acquiring information relevant to the task. On the other hand, FD individuals tend to ignore non-salient cues in the field and seem to be motivated by extrinsic rewards. They are susceptible to social influence and tend to comply and conform to experimenter demands. Also, in stressful and/or threatening circumstances, FD individuals appear to utilize repression and thus exhibit inferior or distorted recall....it appears that FD-FI subjects utilize differential modes of cognitive processing and organization [strategies], but do not necessarily show superior recall or retention.

The review stated that predominantly field-dependent people also appear to be passive, anxiety-prone, and susceptible to social stimuli. Relatively field-independent people appear to be active, resistant to influence, analytical, and less anxious. This suggests a change in the "bipolar" values of the two learning styles.

Noble and Frank (1985) tested 80 volunteer female undergraduates, 40 field-independent and 40 field-dependent, during a psychology course at Kansas State University to determine which would be more efficient at verbal restructuring represented by word anagrams and non-word anagrams. The FI students had significantly faster solution times than the FD subjects for difficult uncued word anagrams. The FI students used different strategies from the FD students to solve the uncued non-word anagrams. Field-independent and field-dependent individuals performed similarly under both the easy and difficult conditions, except for the time factor. The authors recommended further research to determine specific differences in the information processing of field-independent and field-dependent people.

Scores on visual location tasks, using videotapes, were examined in a study of 150 college students (Moore 1985) which indicated that field-dependent people need external help to structure and organize tasks. Based on the Group Embedded Figures Test, the subjects were categorized into three groups: field dependent (10 and below), field neutral (11 to 14), and field independent (15 to 18) .

The videotapes contained a series of black and white pictures, involving

criterion pictures and both linear and multiple presentation modes. Because field-dependent individuals seem to have difficulty retaining a mental image of visual material, Moore theorized that the usual linear presentation mode could be inappropriate. The research showed no significant interaction between presentation mode and learning style. However, both the field-independent and field-neutral subjects scored significantly higher than field-dependent individuals on visual location tasks after viewing videotapes.

The work of Cochran and Davis (1987) with undergraduate students revealed that cognitive style influences learning accuracy and efficiency. Their study indicated that FI and FD adult readers have different abilities to make and remember inferences. Using research materials designed for external validity with respect to applied learning situations, their research supported the hypothesis that field-independent readers are more likely to construct necessary inferences, store those inferences in memory and have them quickly available for rapid confirmation. The subjects read short passages and then verified necessary and unnecessary inferences, paraphrases, and sentences from the passages. "It was concluded that FI-FD cognitive restructuring differences are related to working memory capacity and may influence verbal task performance." This research surely has implications for teaching English as a Second Language.

In 1981 J. Hansen and Stansfield conducted a study with a sample of 300 college students in a first-semester Spanish class. They hypothesized that field dependence could also enhance aspects of foreign language skill

development, but in a different way from field independence. However, they found significant positive relations only between field independence and linguistic, communicative, and integrative test scores in the formal Spanish language course. They cautioned that this did not prove cause and effect. The relationships were stronger for linguistic and integrative skills than for communicative skills.

Another project in 1981 (d'Anglejan and Renaud) evaluated 391 adult Canadian immigrants (225 females and 166 males, ages 17 to 63) who were just finishing a 900-hour course in French. The course had been audio-lingual, and thus structurally based. Students were evaluated by their teachers as good learners or poor learners; this evaluation was compared with their GEFT scores, with information from a 61-item Sociolinguistic and Attitudinal Questionnaire, and with scores of a French as a Second Language test.

This work indicated that the students who benefited most from formal language instruction had more schooling, could reason better nonverbally, practiced French outside the classroom, produced and understood English better, and were more field independent. Conversely, the students who benefited least from the 900-hour course were the least literate, expressed more anxiety, and were generally older (age range from 17 to 63).

Stansfield and J. Hansen (1983) produced a second study of importance for teachers giving second language examinations. The GEFT results for 250 college students in their first semester of Spanish were compared with written examination grade averages, consisting of scores of linguistic, communicative

and integrative abilities. The students were also given an oral assessment of communicative ability. These comparisons showed that an FI cognitive style correlated significantly with higher levels of achievement on all measures of second language proficiency. The correlations were modest except for the cloze test, where the relationship was stronger. (A cloze test is a prose selection from which words have been systematically removed - for example, every seventh word. The students fill in each blank with an appropriate word. Cloze tests correlate highly with other language proficiency tests.) Stansfield and J. Hansen felt that a cloze test bias favoring FI students can be inferred.

This study was replicated in 1984 by L. Hansen, who worked with 286 high school students from six Pacific island cultures who were studying ESL. She was concerned about cultural influences on cognitive styles of second language learners, and with the possible bias of cloze test results. She correlated field dependence and cloze test performances, and also included the relative degree of field dependence in each cultural group and the relationship between field dependence and sex. As she pointed out, the cloze test has generally come to be accepted as "an easily constructed surrogate measure of overall language proficiency."

Referring to the Witkin and Goodenough studies (1981) which found that agrarian and/or authoritarian societies tend to produce more field-dependent persons, L. Hansen hypothesized that traditional South Pacific island students would be significantly more field dependent than students in Hawaii. She wanted to extend the findings of the earlier cloze test study and see if the

correlation between field independence and success with a cloze test was constant across the cultures of her study.

The students, ages 15 to 19, included Samoans, Tongans, Tahitians, Fijians, Indian-Fijians, and Hawaiians. They were located at 7 schools in the South Pacific and Hawaii, in classes equivalent to the 11th grade in the U.S. The Hawaiian students, both male and female, were found to be significantly more field independent than the South Pacific island cultures, and the South Pacific cultures exhibited a significant correlation between males and field independence. The findings on the effect of FI/D in terms of the validity of a cloze test as a measure of language proficiency corroborated the Stansfield and J. Hansen work (1983); however, this was true of the test group as a whole rather than individual cultures.

In "Ambiguity Tolerance and Field Independence as Predictors of Proficiency in English as a Second Language," Chapelle and Roberts (1984) correlated GEFT scores with end-of-semester language measures that included tests of structure, oral communication, dictation, and a cloze test. TOEFL total scores and separate scores for structure, listening and reading, and ambiguity tolerance scores from the MAT-50, a 62-item Likert-type scale, were also correlated. The subjects, 61 adult international students taking the Intensive English Institute courses at the University of Illinois, were native speakers of Japanese, Spanish, and Arabic.

The data were processed with the Statistical Package for the Social Sciences for a multiple regression analysis using language group as a

predictor. The Japanese students were dropped from the study because they differed on all predictors from the other students and could not be considered part of the "homogeneous" Spanish- and Arabic-speaking group. The affective/cognitive scores and language test results were correlated, and the affective/ cognitive scores were used as predictors for end-of-semester English test scores in multiple regression analyses.

The researchers concluded that, despite the limitations inherent in a correlational study, ambiguity tolerance and field independence should be considered components of second language aptitude. Field independence was a significant predictor of performance on the oral test of communicative competence, along with the other English tests. This did not support their original hypothesis that FD would be related to success on the oral test. Interestingly, the relationships of FI with the cloze tests were no stronger than with the other English tests.

In 1985, Abraham conducted a causal-comparative study at Iowa State University to determine whether less-rule-oriented grammar teaching is more beneficial for field-dependent students. The 61 subjects (45 males and 16 females) were students in the high-intermediate level of the Intensive English and Orientation Program. Although four language backgrounds were represented (Spanish, Indonesian, Arabic, and Chinese), specific language background relationship with FI/D was not evaluated. Two computer-assisted instruction (CAI) lessons were developed to teach the use of participial phrases (which are not common in spoken English and so were not likely to have been

acquired previous to the study). One CAI lesson was designed to be inductive, with the rule unstated; the other was deductive, with the rule stated. Participial phrases are governed by a rule with several steps, and whereas the inductive lesson gave examples of the rule, the deductive lesson started with the rule. A pretest and a post-test for participial phrases were developed.

After the pretest, the students were given the GEFT and classified as FI or FD, then randomly assigned to one of the two lessons. Students worked at their own speed after being introduced to the computer system, and someone was available at regularly scheduled times to help with computer problems.

The post-test results were compared to the pretest results and GEFT scores. Statistical analysis utilized the General Linear Models procedures. A regression analysis indicated that both pretest and GEFT scores were significant predictors of post-test scores. Further analysis of the interaction between the lessons and cognitive styles showed that field-independent students tested higher after the deductive lesson and field-dependent students did better after the inductive lesson. A statistical analysis - to determine whether one lesson was more effective overall than the other - showed no significant difference.

Abraham included an analysis of errors on the post-test, asking several questions about the students' internalization process that indicate a need for further research. He thought it likely that the successful students who received the deductive lesson had learned the participial rule consciously and explicitly. All subjects scored higher on the post-test than they had on the pretest, so some

learning about participials took place implicitly in both groups. No attempt was made in this study to determine the influence of background cultures on FI/D because of the small samples for each culture.

This work pointed out the need for future research to compare other grammatical structures with the two methods of teaching. Other questions were whether field-dependent subjects are uncomfortable with grammar rules (and more comfortable with examples), or whether one method of instruction is more effective than the other to facilitate the application of the participial rule in written assignments.

A dissertation search produced one relevant study of 68 ESL secondary students from four ethnolinguistic groups in north central Texas (Ballard 1985). The correlation between GEFT and English language scores on the California Achievement Test for 25 Laotian-, 13 Spanish-, 13 Tongan- and 17 Vietnamese-speaking subjects determined significant positive correlations between FI and higher levels of English proficiency and between FD and lower English proficiency levels. The samples were small and no significant difference in field dependence was found among the four cultural groups. As a result, they were considered homogeneous and treated as a whole.

"Cognitive Style and First Language Background in Second Language Test Performance" (L. Hansen-Strain 1987) explored the influence of first language culture on adult ESL learners. She hypothesized that students from cultures with strong oral traditions (e.g., South Pacific Island cultures) would score higher on spoken English tests, while students from cultures with less

strong oral traditions (e.g., Asian) would score relatively higher on written tests. The subjects were 209 students enrolled in the English Language Institute at Brigham Young University-Hawaii Campus from South Pacific island groups (Tonga, Samoa, and Micronesia), Japan, Korea, the Republic of China, the People's Republic of China, Indonesia, Thailand, Vietnam, Hong Kong, and the Philippines. The various cultures were not considered individually as the students were grouped into three demographic cultural designations: 63 South Pacific islanders, 77 Asians from countries where English as a Foreign Language is used, and 69 Asians studying English as a Second Language.

In addition to being tested for FI/D by the GEFT, students were given the Matching Familiar Figures Test to measure cognitive tempo. The cultures differed significantly: South Pacific islanders were inclined towards impulsivity, and both Asian groups were inclined towards reflectivity. However, the study did not find a significant relationship between cognitive tempo and performance on the battery of English tests that included the Michigan Test of English Language Proficiency, the Michigan Test of Aural Comprehension, an essay graded by two readers on a 10-point scale, a dictation read three times, a cloze passage with every seventh word deleted, and a speaking test with subtests for conversation, reading pronunciation, and a prepared speech.

Both Asian groups tended to be more FI than the South Pacific islanders. Male students were inclined to be more FI than females. Statistically, this was determined by a two-way analysis of variance, or ANOVA. The Pearson product moment was used to determine the direction and strength of the relationship

between GEFT scores and English test scores. Although modest, a higher level of FI correlated positively with higher scores on language tests. A correlation of FI with the cloze test, slightly higher than correlations with the other tests, seemed to support the previous L. Hansen research and the Stansfield and J. Hansen work.

Two midwestern universities were the sites of a study of "The Relationship of Field Dependent/Independent Cognitive Style to Spanish Language Achievement and Proficiency" (Carter 1988). The research attempted to determine if FI is related to language acquisition in formal linguistic programs and if FD is related to success in programs that stress functional language proficiency. Additionally, the study sought to identify factors that students in each group perceived to be important for success in their language study.

Stating that "many classroom activities, and most testing procedures, focus on manipulating foreign language forms, while minimizing attention to social function and meaning," Carter postulated that the interpersonal style of FD persons would contribute to second language success in a functional language program, due to their empathy and meaningful social associations.

She studied two existing representative Spanish language programs, each located in a separate university: a functional language course and a formal linguistic course. The students were all in the second quarter of first-year courses.

The work in the functional program included inductive procedures to

promote communicative competence, including "situational contextualized practice" with actual communication, using pairs and small groups. The goal of instruction was for students to understand and express meanings in Spanish, emphasizing personal activities and interests. The testing program throughout the quarter also relied on oral communication tasks. The formal program focused on grammar and linguistics.

The students were divided into three groups based on GEFT scores: field independent (FI), field central (FC), and field dependent (FD). Numerical designations for the groups were not stated. Spanish ability was measured with a written final test and an examination of communicative Spanish language proficiency for each course. A questionnaire measured students' perceptions of usefulness of learning strategies and resources on a scale of one to seven. Twelve participants from each of six groups (FI, FC, and FD from both classes) were randomly chosen for data analysis, making a total of 72 subjects.

After scores were adjusted to numerical evaluations, a multivariate analysis of variance was applied. Neither learning strategies (functional or formal) nor student evaluations differentiated among the FI, FC, or FD learners. Analysis of FI/D alone showed a significant difference on the final examinations for both courses, where FI and FC students outperformed FD students. Further, FI students outperformed, by an entire level, both FC and FD students on the Oral Proficiency Interview. According to Carter, "FI was found to be advantageous on both achievement and proficiency measures, independently of course orientation."

The only significant factor discovered in the analysis of the course orientation was the use of the computer. Computer-assisted practice was rated more helpful by students in the proficiency-oriented program. This could have been the Hawthorne effect, since CAI was new to this group. In an analysis of course orientation, FI students perceived focus on meaning as significantly more important than did FD students. The author pointed out that these findings conflict with Brown's conclusion (1980 and 1987) that FI is positively related to formal class success and FD is similarly related to functional success in second language learning.

Brown revised his book in 1987, reiterated his earlier premise, and questioned whether cognitive styles are stable in adults. He said that there are two conflicting hypotheses with regard to FI/D: his own, and that derived from the work of L. Hansen (1984), Hansen and Stansfield (1981), Stansfield and Hansen (1983), Naiman et al. (1978), and Abraham (1985). These studies show that field independence can be correlated positively with second language learning in the areas of "analysis, attention to details, and mastering of exercises, drills, and other focused activities" (Brown 1987).

Brown offered his own 1973 research and one other study conducted by Guiora et al. in 1972 in support of his hypotheses that field dependence with its empathy and "social outreach" aids performance in the communicative aspects of second language learning, and that field independence is a negative influence on informal oral achievement. He still felt that cognitive flexibility is possible for adults, and he stated that children, "more predominantly field-

dependent," may have an advantage over FI adults in second language learning because of differences between acquisition and learning.

The manual for the Group Embedded Figures Test (Witkin et al. 1971) indicates that definite age-related changes in field dependence normally occur within each life span. Children usually show a marked, continuous increase in FI from age 8 to approximately age 15; within this period, the rate of change slows as the child gets older. Sometime from age 15 through young adulthood, a plateau is approached; then , "at some point between age 24 and old age," perhaps in the late 30s, field dependence begins to increase, a process that gains momentum through time. These changes are relative, depending on the child's FI/D at age 8, and remain relatively stable in relation to one's peers. Test-retest correlations for the Embedded Figures Test tend to be very high, with a reliability coefficient of .905. There is no mention of flexibility, only of a tendency for "absolute stability" of **field dependence** in young adulthood.

Brown (1987) did not discuss the effects of first language culture on FI/D or cognitive flexibility for second language learners. The performance levels on language tests for field-dependent adults in this review were generally lower than those for field-independent adults. If FD individuals could have switched styles to facilitate their learning, why didn't they do so and test higher? Brown felt that the responsibility to accommodate cognitive style in second language learning should be shared by the learner and the teacher. While this could be true for children, research studies indicate that the teacher has greater flexibility when working with FD adults. An FD learner needs to know his/her cognitive

style and its implications before he/she can assume responsibility to accommodate that style in second language learning. These implications are not completely clear at present.

Most research indicates a positive correlation between FI and success in learning English as a Second Language. Abraham's study indicated that FD individuals learned a grammar rule better inductively with CAI. Current ESL texts (Bowen, Madsen and Hilferty 1985; Long and Richards 1987) advocate inductive teaching to promote communicative competence for all students. Research in inductive teaching for FD learners has been limited. Controls for research in this area ought to exceed merely choosing two courses with different learning strategies at different universities (Carter 1988) to determine more about the way that FD people can most effectively learn a second language.

Field independence/dependence has been extensively researched in psychological studies, but much more needs to be done in the discipline of second language learning, especially concerning the influence of background culture on learning styles of adults from other countries who live in the United States. Teaching ESL to immigrant adults is an ever-increasing enterprise in this country. If these adults are field-dependent, the question is whether their language educational needs are being met.

CHAPTER 3

Methodology

Research Design

Every day in multicultural second language classrooms, teachers of adults find that wide-ranging cultural and educational differences in their students make teaching difficult. This research was designed to explore these differences and how they relate to learning. A correlational research design was chosen because it is appropriate for an educational problem in order to study variables related to achievement. This research qualified under the exemptions listed for "Research on Human Subjects." It was conducted in established educational settings, and involved the use of educational tests and surveys.

Cognitive learning styles have been identified since the research of Witkin et al. in 1962. A social construct was developed for field independence/ dependence, based on the descriptive studies of Witkin and Goodenough (1981) and Ramírez and Castañeda (1974). During the 1980s increased attention has been given to field independence as a predictor for success in second language learning, although the role of field dependence is less well understood (Brown 1987). Most of the studies reviewed were correlational. Every study recommended additional research to learn more about field dependence, or to learn more about the relationship of learning styles to effective second language teaching.

Little research has been done using the cultural differences of adults as a

variable (Hansen 1984). Hansen-Strain (1987) found that Asian students in a Hawaiian university tend to be more FI than South Pacific island students, and male students tend to be more FI than female students.

L. Hansen (1984) found that high school students from highly social South Pacific island societies' strict child-rearing customs are significantly more FD than American students in Hawaii. Both growing up in America, where rearing practices are usually more relaxed, and attending American schools promote field independence (Ramírez and Castañeda 1974). This present study investigates the relationship between culture and FI/D in Korean and Japanese adult students.

Witkin et al. (1971) correlated age with FI/D in a longitudinal study. Age is also related to FI in regard to second language learning (d'Anglejan and Renaud 1981). This present research examines the relationship of the ages of Korean and Japanese adult learners to their FI/D and English language ability. D'Anglejan and Renaud also found that years of education and FI tend to be predictors for successful second language learning, but they did not study specific cultures. Working with immigrants from 50 different countries who were attending a 900-hour French course, they were able to test for discrete information taught in that course. The research presented here was not able to do that because the participants were enrolled in many different ESL programs. D'Anglejan and Renaud did not correlate the variable of length of Canadian residence, whereas this study examines years of U.S. residence to determine its relationship to both FI/D and the ability to learn English.

This research measured field independence/dependence and investigated the relationship of field independence to culture, age, years of formal education, years of U.S. residence, and English language ability for university and community ESL students from two Asian groups living in America. It also investigated field independence, age, years of education, and length of U.S. residence as predictors for English language ability, as measured by the BEST, for these Korean and Japanese subjects.

Population

This research was designed to test as many accessible subjects as possible of the adult Koreans and Japanese studying in university and community ESL programs in Anchorage, Alaska. It took several months to establish rapport with program directors and teachers through telephone calls followed by personal contacts, Before granting approval for testing, each had an opportunity to examine the instruments to be used in the study, read the review of the literature, and assess the impact of testing on their classrooms. Access to individual classes was granted on a teacher-by-teacher basis. It was not denied to a single program in Anchorage, although two teachers allowed limited access. Twenty classes were tested in ESL programs at the Adult Learning Center, the Anchorage Literacy Project, the Baptist Literacy and Citizenship Program, Alaska Pacific University and the University of Alaska Anchorage.

A total of 157 adult ESL students were tested, including 109 Koreans and

48 Japanese from age 18 to 74, of whom 91 were community students and 66 were university students.

Confidentiality of Subjects

Confidentiality of subjects was assured by the use of a code number for each participant. A confidential file was maintained by the researcher so that the subjects could be informed, if they requested, about their cognitive styles. The file was kept until the study was completed, to eliminate duplicate testing of the many individuals who attend more than one ESL community program. The file was destroyed after completion of the study.

Instrumentation

The instruments chosen for this design were the Group Embedded Figures Test (GEFT), the Michigan Test of English Language Proficiency (MTELP), and the Basic English Skills Test (BEST). National origin, age, sex, years of prior schooling, and years of U.S. residence were recorded for each subject when they took the GEFT.

The GEFT is an adaptation of the original Embedded Figures Test (EFT) developed by Oltman, Raskin, and Witkin (Witkin et al. 1971), with a range of raw scores from 0 to 18. The Eighth Mental Measurements Yearbook (1978) included two reviews of this test. The first, by Goodstein, stated that construct validity is the only kind possible for this type of instrument, that the validity is found in the construct body of literature, and that the reliability of the test had been adequately measured by a correlation of the second and third sections. A

reliability estimate of .82 was obtained, using the Spearman-Brown formula. The same correlation was obtained with the original Embedded Figures Test. Goodstein called the GEFT "a different and potentially powerful approach to tapping one of the cognitive style dimensions of human personality. . .a well-conceptualized and well-researched instrument."

In a second review, Hall suggested that partial scoring for the items in the test should be investigated, and that more data were needed to place a person on the FI/D continuum. The construct validity, based on over 300 references at that time, impressed him.

A new test of field independence, the Finding Embedded Figures Test (FEFT), is being developed (Melancon and Thompson, 1987). This test will be machine-scorable which the GEFT is not. The literature describing the FEFT states that "most previous research has utilized the Group Embedded Figures Test," citing 216 research studies with the GEFT as construct validity.

The Michigan Test of English Language Proficiency (MTELP) was designed specifically to test ESL students. It is often used to determine placement in an ESL program, and has been used in previous FI/D studies of students from specific cultures learning ESL (L. Hansen 1984, Hansen-Strain 1987).

The MTLEP has a split-half reliability coefficient of .965 (computed for 300 students from 10 unrelated language backgrounds, randomly selected from applicants to 150 U.S. universities), with a standard error of measurement of 3.35. The internal-consistency measure of reliability determination produced an

adjusted mean score of 84.55 for 100 "highly proficient" foreign applicants to U. S. universities. The reliability coefficient was .894 and the standard error of measurement was 3.54. For additional forms of the MTELP, the reliability coefficient (computed using test scores of 150 applicants to U.S. universities) was greater than .92 and the standard error of measurement of raw scores was less than 4.70.

The MTELP content validity was given separately for reading, grammar and vocabulary. The reading section was designed to be similar to that required of all university students. The grammar and vocabulary sections represent curricula only for ESL classes. The construct validity relates to vocabulary basic in academic situations and the grammar section deals with those items that have been shown, by pre-testing, to be difficult for ESL students. The predictive validity was determined through comparison of English proficiency scores with test scores in various disciplines for 599 students in their first university semester. The MTELP review pointed out that language proficiency is only one predictor for university performance.

The Basic English Skills Test (BEST) was developed to test the "survival" English skills taught to immigrant refugees. Form B, presently in use through the Center for Applied Linguistics, has a reliability coefficient of .966 for the Literacy Skills Section and a reliability coefficient of .911 for the Oral Interview Section. A reliability of .90 for tests in which individual decisions are made is considered sufficient by the American Educational Research Association.

The validity of the BEST was established through a study by the

Mainstream English Language Training project staff of the Office of Refugee Resettlement, U.S. Department of Health and Human Services. Test scores were correlated with pre-assigned group ratings of overall language proficiency determined through other instruments for subjects enrolled in the language training. Student performance levels were constructed through a modified contour analysis that included every subscale score. Mean scores and standard deviations on the BEST were determined for each subscale in both sections. Correlations between scores on the subscales and total scores produced coefficients of .979 for reading, .928 for writing, .809 for listening comprehension, .961 for communication, and .926 for fluency (Kenyon and Stansfield 1988).

Limitations of Tests

One limitation in administering the GEFT to speakers of another language is the language barrier to understanding test instructions. To overcome this potential problem, the instructions were translated into Korean and Japanese for the subjects in this study. Every subject was given a copy of the instructions in his or her native language, and time to read those instructions. Where they had little formal education, such as the Korean elders at the Korean Community Center, their teacher arranged for an interpreter to explain the test procedures. Also, large cardboard cutouts of the first practice example, the complex figure and the simple figure to be found in the complex figure, were used to demonstrate how one could be found in the other. In

addition, when there seemed to be any confusion during the instruction period, the subjects were encouraged to trace with their fingers and identify, by name, the seven figures on the back page of the test booklet. These are the figures to be located during the test.

This procedure did not locate the embedded figures in the test, but it did help the subjects understand the test instructions. It seemed useless to administer a test that some participants did not understand. The test manual did not suggest these procedures. However, the first third of the test is a practice session that is not counted in scoring the test, and these procedures seemed to be consistent with the purpose of practice. The test instructions were also explained in English to everyone, as stipulated in the test booklet.

Another limitation is the fact that the GEFT is a timed test that requires subjects to move swiftly from one problem to another. Prior experience in taking timed tests was an asset; some subjects had never taken a timed test.

The BEST was used on the advice of Dr. Charles Stansfield of the Center for Applied Linguistics. Dr. Stansfield has researched field independence and its relation to learning Spanish as a second language, and the two studies he co-authored were reviewed for this research (Stansfield and J. Hansen 1983, J. Hansen and Stansfield 1981). In 1988 Stansfield and Kenyon revised and expanded the BEST Test Manual. The BEST was developed to test competency-based communication curricula in non-academic English courses for adults. It was obtained through the Refugee Materials Center in Missouri until the end of 1987, when it became available through the Center for Applied

Linguistics. It has a wide range (159 possible points); it tests a graduated, extensive selection of abilities; and it is an appropriate instrument for community and lower-level university students. However, it has some limitations for both of these groups.

The BEST Literacy Skills Section assesses reading and writing skills. Reading is tested by the ability to read American calendars, telephone books, price tags on food items and clothes, newspaper advertisements, doctors' appointment slips, and information in a driver's manual. Writing a check, correctly addressing an envelope, filling in forms, and writing notes to a teacher and a friend comprise the writing part of this section. The Oral Interview Section includes telling time, following directions on a map, buying food and using money, talking to a physician, responding to questions about an accident and working in a restaurant. Comprehension, communication and fluency are all scored.

The BEST measures skills that people usually need in the process of everyday living in America, using English that can be learned or acquired over a period of time, whether the individual is FD or FI. Some community classes are designed to teach these skills, but many are not. Testing could not take into account acquired learning or the quality or quantity of past formal learning, and it could not test discrete teaching of the items in the BEST. Individuals who have lived longer in the U.S. have had more opportunity to learn the skills tested by the BEST.

Limitations for university students are clear. The English language

student is often preparing for an academic goal. Most have studied English before coming to the U.S., and they come to ESL classes to continue that study. They may have good vocabularies and understand English grammar, but they may not be familiar with such items as an American telephone book, a newspaper advertisement, or the terminology in a driver's manual.

Data Collection Procedures

Administration of the Basic English Skills Test required 60 minutes, the Oral Interview for the BEST took 15 to 20 minutes, the Michigan Test of English Language Proficiency required 75 minutes, and the Aural MTELP required 30 minutes. Each of these tests needed approximately 3 additional minutes of instruction time. The Group Embedded Figures Test required 30 minutes, but an additional 10 minutes was necessary for the subjects to read the instructions in their language. It was essential to the study to administer the GEFT and either the MTELP or BEST to every subject. Oral or aural tests were given when time and the availability of subjects permitted.

Testing occurred in twenty classes at ten locations during two periods in 1989, from March 20 through May 26 and from October 26 through November 28. The university and community ESL programs operate on a limited basis (or not at all) during the summer months; and by testing in two periods it was possible to include subjects and programs in the fall that were not available earlier. A total of 157 Korean and Japanese adult subjects was tested, and it was the consensus of the ESL teachers that this constituted a majority of the

target population. The tests were given in English Language Institute classes at Alaska Pacific University; ESL classes at the University of Alaska Anchorage; Adult Learning Center classes at the Northern Lights headquarters, the Michael Building and Mountain View Elementary School; Anchorage Literacy Project classes at ALP offices, the Korean Community Center and the Salvation Army; and Baptist literacy and citizenship classes at the South Anchorage Baptist Church and the Grandview Baptist Church.

Testing time at the University of Alaska Anchorage was limited by the usual 90-minute class periods, so it was not possible to conduct oral interviews for the BEST or the Aural MTELP. One class in vocabulary building met for just one hour, and the instructor limited the researcher's classroom contact to a request for the students to stay after class for the testing. Two stayed for testing, and most of the other students were tested in other UAA classes.

The Baptist program did not allow access to those few students attending their final citizenship classes. It was the last program tested, and at the Grandview location there were nine students available to take the tests, six of whom had been tested at other locations. The final day of testing was November 28; arrangements had been made to test a class on December 2, but at the site the researcher found that all students had already been tested in other classes. Many of the subjects attended classes at two or more locations, in as many as three different programs.

At all other locations the researcher was allowed free access to test and return to give additional tests and oral interviews. Sporadic attendance, which

made numerous return visits necessary to test those enrolled, was the only limitation for the community classes. The largest number of subjects tested at one time was eighteen and the smallest number was one, with an average of five subjects per testing period. Time required to give the 101 BEST Oral Interviews totaled approximately 34 hours.

Tests were hand-scored, and every fifth test was rechecked. The data for each variable (culture, age, years of education, years of U.S. residence, and test scores) were recorded by computer for every subject's identification number.

Null Hypothesis

The null hypothesis for this study was that: (1) there are no significant differences in the FI/D of Korean and Japanese adult ESL learner groups; (2) there are no significant differences in the FI/D of university and community adult ESL learner groups; (3) there are no significant relationships between field independence and age, years of education, years of U.S. residence, and English language ability for both Asian groups considered together; (4) field independence, age, years of education and years of U.S. residence are not predictors for the criterion of English language ability; and (5) any relationship occurs strictly by chance.

Statistical Analysis

A correlation coefficient was established for each component of the null hypotheses. Scores for each variable were paired, correlated, and measured

by chi square and the Pearson *r*.

The Statistical Package for the Social Sciences (SPSS/PC) was used to calculate frequencies, means, standard deviations, standard errors, and skewness. The mean was the measure of central tendency, but the median and mode were also utilized for descriptive statistics. Multiple regression was used for the prediction analysis. By involving virtually the entire target population in the research. a potential problem with level of confidence, or probability, was eliminated.

Field independence was designated for those scoring 10 to 18; field dependence was designated for those with scores of 0 to 9 (the mean GEFT score for all subjects was 8.605). Two age categories - subjects under 35 and subjects 35 and over - were formed for statistical analysis. Years of formal education were divided into two groups, for subjects with less than 12 years of education, and those with 12 years or more. Residence groups were categorized for those who had lived in the U.S. less than 2 years and those who had lived in the U.S. 2 years or more.

CHAPTER 4

Findings and Data Analysis

Demographic Data

Of the 157 adult ESL students tested in this research, 69.4% (109) were Korean and 30.6% (48) Japanese; 68.2% (107) were female and 31.8% (50) male; 58.0% (91) were community and 42.0% (66) university students.

Subjects ranged in age from 18 to 74. The mean age was 36.9, the median was 34, and the mode was 25. Age data for the subgroups (Korean community, Japanese community, Korean university, and Japanese university) are reported in Table 1. Most of the older subjects were Korean community students, the oldest of whom was 74. This helped raise the mean age of the Korean community subjects to 42 years. The Korean community age mode indicates that more subjects were 31 when tested than any other age, although their median age was 40.

With far fewer Japanese community subjects (10), the median age of 39 was close to that of the Koreans. More Japanese community students were 39 when tested than any other age, and the Japanese community mean age of 37.9 was not much lower than the mode and median.

The university students overall tended to be younger. More subjects among both the 28 Korean and 38 Japanese university students were age 20 when tested than any other age. The Japanese university students tended to be slightly older than their Korean counterparts, with a mean of 31.684 and

median of 31. The Korean university mean age was 28.571; the median was 25.5.

TABLE 1

Subgroup Characteristics by Age

	N	Mean	Median	Mode	S.D.	S.E.	Skew
Korean Community	81	42.074	40.000	31.000	14.540	1.616	.501
Japanese Community	10	37.900	39.000	39.000	6.590	2.084	-.258
Korean University	28	28.571	25.500	20.000	8.368	1.581	1.111
Japanese University	38	31.684	31.000	20.000	12.305	1.996	1.394
Total	157	36.885	34.000	25.000	13.856	1.106	.847

Data for each subject's years of formal education were recorded. The maximum number of years of education reported was 19, and the minimum was 0. The mean was 11.038, the median was 12 and the mode was 12. The years of education for each subgroup are recorded in Table 2.

The mean of years of education for the 81 Korean community subjects was 8.704, lower than that of any other subgroup; the Japanese community mean of years of education was 13.100, Korean university 13.607, and Japanese university 13.579. The 10 community Japanese students had the highest median (14) and mode (14); the mode for every other subgroup was 12 years. Three subgroups had medians of years of education that were close: the Japanese community median was 14.0, and both Korean and Japanese university medians were 13.5. The community Koreans, however, had a

median of years of education of 9.0.

TABLE 2

Subgroup Characteristics by Years of Education

	N	Mean	Median	Mode	S.D.	S.E.	Skew
Korean Community	81	8.704	9.000	12.000	5.014	.557	-.455
Japanese Community	10	13.100	14.000	14.000	2.234	.706	-1.277
Korean University	28	13.607	13.500	12.000	1.792	.339	.353
Japanese University	38	13.579	13.500	12.000	2.151	.349	.066
Total	157	11.038	12.000	12.000	4.549	.363	-1.116

Data were reported for years (or fractions of a year) of residence in the U.S. for only 137 of the 157 subjects. For those reported, the maximum time of residence in the U.S. was 28 years and the minimum time was 0 (2 weeks). The mean was 4.118 years, the median was 2. However, the mode was 0.3, or less than 4 months. This is not surprising because many of these students enroll in ESL classes upon arrival in the U.S. The subgroup characteristics for years of U.S. residence are presented in Table 3.

The Korean community subjects tended to have resided in the U.S. longer than any other subgroup, with a mean period of residence of 6.217 years. Their median for years of residence was 4.5 years, but the mode was just one year. The Japanese community subjects were next with a mean length of residence of 3.550 years. The university students tended to have resided in the U.S. for shorter times. The mean residence period for Korean university

students was 2.785 years, and 1.450 years for the Japanese; however, the mode for both subgroups was 0.3 years. The medians for the four subgroups, in descending order, were 4.5 years for the Korean community, 2.3 years for the Japanese community, 1.7 years for the Korean university, and 0.7 years for the Japanese university. Table 4 contains a summary of demographic characteristics.

TABLE 3

Subgroup Characteristics by Years in U.S. Residence

	N	Mean	Median	Mode	S.D.	S.E.	Skew
Korean Community	65	6.217	4.500	1.000	6.494	.805	1.277
Japanese Community	10	3.550	2.500	3.000	4.958	1.568	2.652
Korean University	27	2.785	1.750	0.300	3.235	.634	2.030
Japanese University	35	1.450	0.700	0.300	2.034	.339	3.286
Total	137	4.118	2.000	0.300	5.368	.459	1.968

TABLE 4

Summary of Demographic Characteristics

Characteristic	N	Mean	Median	Mode	S.D.	S.E.	Skew
Age in Years	157	36.885	34.000	25.000	13.856	1.106	.847
Years of Education	157	11.038	12.000	12.000	4.549	.363	-1.116
Years U.S. Residence	137	4.118	2.000	.300	5.368	.459	1.968

Athough not part of the research hypothesis, sex was recorded for each subject taking the GEFT, with more females than males in every subgroup. The

Korean community subgroup had more than twice as many females as males (56 to 25), and the Korean university subgroup consisted of 18 females and 10 males. The Japanese community subgroup was composed of 9 females and only 1 male while the Japanese university subgroup had 24 females and 14 males. These findings are presented in Table 5.

Table 5

Subgroup Characteristics by Sex

Subjects	Male	Female
Korean Community	25	56
Korean University	10	18
Japanese Community	1	9
Japanese University	14	24
Total	50	107

Field Independence/Dependence

All of the 157 students took the Group Embedded Figures Test (GEFT), and 56.7% (89) proved to be field dependent, or able to solve nine or fewer of the eighteen problems in the GEFT. Correspondingly, 43% (68) of the students are field independent (i.e., those who solved ten or more of the eighteen problems in the GEFT). As noted in Table 14, page 75, the GEFT mean for all subjects was 8.605 and the median was 9, but the mode was 0. Table 15, page 75, indicates that 25% of the subjects found no more than three of the embedded figures. A breakdown of the GEFT for each segment of the

population is shown in Tables 8 and 9.

Of the 109 Koreans tested, 72.5% are field dependent and 27.5% are field independent. In contrast, only 20.8% of the 48 Japanese in this study are FD and 79.2% are FI. A chi square test of significance for the differences between the groups compared the FI/D observed frequencies with expected frequencies, resulting in a chi square of 36.200 with 1 degree of freedom and signifcance of .0000. A *t* test of significance for the between-group differences, using the Korean GEFT mean and Japanese GEFT mean as the measures of central tendency, computed a *t* value of -8.04, 155 degrees of freedom, and a significance of .000. If the null hypothesis were true, it would be expected that no difference between the groups would be found. Since there is a significant difference, the null hypothesis is rejected. These findings are presented in Table 7.

The large disparity between the Korean mean GEFT of 6.321 and the Japanese mean GEFT of 13.792 suggests that the Koreans may have been reared in a traditional highly-structured, extended-family culture which did not provide the optimum situation to learn to select, analyze, and organize information and experience as efficiently as those reared in the more industrialized Japanese culture.

The community students in this study are significantly more field dependent than the university students, as deliniated in Table 6. Of the 91 community students, 73.6% are FD and 26.4% are FI. Only 33.3% of all the 66 university students are FD, and 66.7% are FI. A chi square test of significance

for the differences between the FI/D observed and expected frequencies in the two groups produced a chi square of 25.296 with 1 degree of freedom and a significance of .0000. A *t* test of significance for the differences between the two groups was performed using the mean of the community students (5.890) and that of the university students (12.349). The *t* test result was -7.24, with 155 degrees of freedom and a significance of .000, as noted in Table 7. The null hypothesis that there would be no difference in the pattern of FI/D between the community and university groups is also rejected.

Table 6

Field Independence/Dependence
Community and University

Subjects	N	Field Independent	N	Field Dependent	Total N
Community	24	26.4%	67	73.6%	91
University	44	66.7%	22	33.3%	66

Table 7

Tests of Significance
Between Group Differences

Subjects	Chi Square	df	Significance	Mean	t value	df
Korean Japanese	36.200	1	.0000	6.321 13.791	-8.04*	155
Community University	25.296	1	.0000	5.890 12.349	-7.24*	155

*p< .000

Referring to only the community students in Tables 8 and 9, greater disparity is observed when the Korean mean GEFT of 4.946 is compared with the Japanese mean GEFT of 13.700. The 81 Korean subjects comprised 89% of the total community group of 91. The figure changes considerably with the younger Korean students attending universities where the mean GEFT of Koreans is 10.357 and the mean GEFT of Japanese is 13.816. The mean GEFT scores for community and university subjects differed little for the Japanese but increased from 6.321 to 10.357 for the Koreans. It appears that the younger Koreans in universities were reared in a less-structured environment than the older Koreans in the community.

The FD Korean community and university subjects had relatively low mean GEFT scores (3.015 and 4.750). For this study (determined by the mean of 8.605 for all subjects), field dependence ranges from 0 to 9. The FD Japanese university students had a higher mean of 6.600, and there were no FD Japanese community subjects.

Comparing the GEFT modes for all Koreans and Japanese gives even more dramatic results. Table 8 indicates that the Korean GEFT mode is 0, while the Japanese GEFT mode in Table 9 is 18. The differences in cognitive styles diminish considerably when comparing only the university students, where the Korean mode is 16 and the Japanese mode remains 18.

TABLE 8

Korean Field Independence/Dependence
27.5% Field Independent (30)
72.5% Field Dependent (79)

Subjects	N	Mean	Median	Mode	S.D.	S.E.	Skew
All Koreans	109	6.321	4.000	0.000	5.709	.547	.633
Community	81	4.946	3.000	0.000	5.047	.561	1.054
Comm. FI	14	14.071	13.500	12.000	2.495	.667	.495
Comm. FD	67	3.015	2.000	0.000	2.863	.350	.747
University	28	10.357	11.000	16.000	5.671	1.072	-.368
Univ. FI	16	14.563	15.500	16.000	2.555	.639	-.617
Univ. FD	12	4.750	4.500	4.000	3.166	.914	-.014

Table 9

Japanese Field Independence/Dependence
79.2% Field Independent (38)
20.8% Field Dependent (10)

Subjects	N	Mean	Median	Mode	S.D.	S.E.	Skew
All Japanese	48	13.792	16.000	18.000	4.462	.644	-.960
Community	10	13.700	13.000	12.000	2.627	.831	.086
Comm. FI	10	13.700	13.000	12.000	2.627	.831	.086
Comm. FD	0	____	____	____	____	___	___
University	38	13.816	16.000	18.000	4.859	.788	-.969
Univ. FI	28	16.393	17.000	18.000	2.079	.393	-1.582
Univ. FD	10	6.600	7.000	9.000	2.366	.748	-.785

Correlations with Age, Education, and Years of U.S. Residence

A chi square test and *t* test were used to determine the strength and validity of each relationship of field independence with age, years of education, and years of U.S. residence. The results of a *t* test are identical to a simple analysis of variance, or ANOVA.

Correlating the ages of all the 157 students with FI/D, it was discovered that 42% of the 81 subjects under age 35 are FD, and 58% are FI. Of the 76 subjects age 35 and over, 72.4% are FD; only 27.6% are FI, as shown in Table 10. The chi square test of significance for the between-group variations was 14.752, with 1 degree of freedom and a significance of .0001. The *t* test to relate the mean GEFT score (8.605) with the mean age (36.885) produced a correlation coefficienct of -.5164 which was significant at .001, as noted in Table 11. This modest reverse correlation indicates that, as age increases, GEFT scores tend to decrease. The null hypothesis stated that there would be no significant relationship between age and GEFT score; consequently, the null hypothesis is rejected.

Of the 157 subjects, 50 reported less than 12 years of education. Of those 50, 94% (47) are FD and 6% (3) are FI. Of the 107 subjects with 12 or more years of education, 39.3% are FD and 60.7% are FI, as presented in Table 10. The chi square test of significance for the between-group differences was 41.599, with 1 degree of freedom and a significance of .0000. The *t* test with the mean GEFT score of 8.605 and the mean number of years of education of 11.0382 produced a sound correlation coefficient of .604 which is significant

at .001. This suggests that higher GEFT scores correlate with more years of education. These results are shown in Table 11. The null hypothesis stated that no significant relationship would be found between field independence/ dependence and years of education; the null hypothesis is therefore rejected.

Only 137 subjects reported their years (or fractions of years) of U.S. residence. Of those, 63 had lived in the U.S. less than two years and 74 had lived here two or more years. Of the 63 who had lived in the U.S. less than two years, 39.7% are field dependent and 60.3% are field independent. More of the 74 subjects who have lived in the U.S. for two years or more are FD (70.3%), and 29.7% are FI, as shown in Table 10. The chi square is 12.934 with 1 degree of freedom and a significance of .0003. The *t* test correlation of 4.118 for mean years of U.S. residence with the mean GEFT score of 8.693 provides a correlation coefficient of -.4867, with a significance of .001. This is a modest inverse relationship, indicating that the subjects who have lived in the U.S. longer tend to be more field dependent. This is surprising only if the Japanese mean for years in U.S. residence, 1.907, is not correlated with the Korean mean of 5.236. The *t* value of that correlation is 4.37, with 135 degrees of freedom and a significance of .000. This could be an indication that more of the Koreans are settling in the U.S., while the Japanese may be staying here temporarily for specific purposes, such as education or business. A *t* test using the community mean for years in U.S. residence of 5.861, for a correlation with the university mean for years in U.S. residence of 2.01, produced a *t* value of 4.77, with 103.23 degrees of freedom and a significance of .000. This indicates that the

community subjects tend to remain in the U.S. longer than the university subjects, and 89% of the community students are Korean (see Table 11). The null hypothesis, that there is no correlation between field independence and years of U.S. residence, is therefore rejected.

TABLE 10

Field Independence/Dependence Distribution
Demographic Details by Years

	Age (157)		Education (157)		Residence (137)	
	<35 (81)	≥35 (76)	<12 (50)	≥12 (107)	<2 (63)	≥2 (74)
FI	58%	27.6%	6%	60.7%	60.3%	29.7%
FD	42%	72.4%	94%	39.3%	39.7%	70.3%

Table 11

Correlation of Field Independence/ GEFT
with Age, Years of Education, Years of U.S. Residence

	N	Chi Square	df	Significance	Mean	Pearson r
Age	157	14.752	1	.0001	36.885	-.5164*
Education	157	41.599	1	.0000	11.038	.6043*
US Residence	137	12.934	1	.0003	4.118	-.4867*

*p< .001

The subgroup distribution for FI/D by sex can be found in Table 12. Of the 25 Korean community males, 28% are FI and 72% are FD. A smaller percentage (12.5%) of the 56 Korean community females are FI while 87.5% are FD. The male Korean community FD pattern is almost reversed for the university students: 80% are FI and 20% are FD. More (55.6%) of the female Korean university students are FI and 44.4% are FD. The 1 male and the 9 females in the Japanese community subgroup are all FI. Of the 14 Japanese university males, 71.4% are FI and 28.6% are FD. A larger percentage (75%) of the Japanese university females are FI, while 25% are FD.

Table 12

Field Independence/Dependence by Sex

Subgroups	Male	FI	FD	Female	FI	FD
Korean Community	25	28.0%	72.0%	56	12.5%	87.5%
Korean University	10	80.0%	20.0%	18	44.4%	55.6%
Japanese Community	1	100.0%	00.0%	9	100.0%	00.0%
Japanese University	14	71.4%	28.6%	24	75.0%	25.0%

The males in all groups outperformed the females on the GEFT. The 107 females had a mean GEFT score of 7.785 and the 50 males had a mean GEFT score of 10.360. The medians were close to the means, at 6 for the females and 10 for the males. The female GEFT mode was 0, while the male mode was 18. The figures are presented in Table 13. These findings are consistent with previous culture-based research (Witkin 1976, Ramírez and Castañeda 1974, L.

Hansen 1984, d'Anglejan and Renaud 1981, Ballard 1985, Hansen-Strain 1987).

Table 13

GEFT Performance by Sex
N = 157

Subgroups	N	Mean	Median	Mode	S.D.	S.E.	Skew
Female	107	7.785	6.000	0.000	6.304	.609	.296
Male	50	10.360	10.000	18.000	6.190	.875	-.265

English Tests

The Basic English Skills Test (BEST) Literacy Skills Section was administered to 102 subjects. This test was given to all of the community ESL students who could read and write English, and to lower-level ESL students at Alaska Pacific University and the University of Alaska Anchorage. The maximum score on this test is 78. The highest score of the subjects tested was 76 and the lowest score was 10, providing a range of 66. The mean was 53.892, the median was 54.5, and the mode was 51. Test results are found in Table 14. As indicated in Table 15, 10% of the subjects scored higher than 72 on the test.

The BEST Oral Interview Section was given to 101 subjects. This is a 15-minute, one-on-one interview. It was administered to the lower-level university students at Alaska Pacific University, but University of Alaska Anchorage

students were not permitted the time to take it. The Best Oral Interview was also given to every possible community student who took the BEST Literacy Skills Section. A total of 26 community students were unable to read or write English and could not do the Literacy Skills Section, so only the Oral Interview Section was administered. Ten community students who took the BEST Literacy Skills Section did not take the BEST Oral Interview because they did not return to the classrooms when the researcher returned, and time did not permit their interviews in conjunction with the initial tests, the BEST Literacy Skills Section and GEFT.

No subject scored the maximum 81 points on the BEST Oral Interview. As shown in Table 14, the highest score on the Oral Interview was 78 and the lowest score was 3, making a range of 75. The mean was 44.129, the median was 49., and the mode was 58. As indicated in Table 15, 10% of the subjects scored 14 or below. At no time did the researcher know the results of the Group Embedded Figures Test for an individual before administering the BEST Oral Interview to that individual.

The Michigan Test of English Language Proficiency (MTELP) was taken by 29 higher-level university students. There are 100 possible points on this test. The highest score was 68 and the lowest score was 19, with a range of 49. The mean was 39.069, the median was 38. and the mode was 32. The results are found in Table 14. As indicated in Table 15, 90% of the students who took this test scored 57 or lower.

Ten of the higher-level university students attended the University of

Alaska Anchorage and were unable to take the Aural MTELP because of time constraints; however, 19 students at Alaska Pacific University took the test. Of a possible 100 points, the highest score was 96 and the lowest was 35. The mean was 73.211, the median was 79. and the mode was 79. These data are found in Table 14.

TABLE 14

Test Performance
N = 157

Test	N	Mean	Median	Mode	S.D.	S.E.	Skew
GEFT	157	8.605	9.000	0.000	6.363	.508	.113
BEST	102	53.892	54.500	51.000	14.165	1.403	-.583
BEST Oral	101	44.129	49.000	58.000	19.193	1.910	-.492
MTELP	29	39.069	38.000	32.000	11.414	2.120	.542
Aural MTELP	19	73.211	79.000	79.000	15.028	3.448	-1.273

TABLE 15

Test Performance Percentages

Test	Items	10%	25%	50%	75%	90%
GEFT	18	0.000	3.000	9.000	15.000	18.000
BEST	78	38.000	43.750	54.500	66.000	72.000
BEST Oral	81	14.000	31.000	49.000	57.000	66.000
MTELP	100	24.000	31.500	38.000	45.500	57.000
Aural MTELP	100	46.000	70.000	79.000	82.000	86.000

The Pearson *r* procedure was used to compute the direction and the strength of the relationship between the GEFT and each of the English tests, but

no single test was used as a measure of English Language Ability (ELA). The correlation coefficients between field independence (as measured by GEFT scores) and the BEST scores (Literary Skills Section and BEST Oral Interview scores) were moderate, but significant. This indicates a linear relationship: a higher GEFT score (or field independence) tends to relate to higher scores on these tests.

TABLE 16

Pearson *r* Correlations between Field Independence and BEST Scores

	N	Cross-Product Deviation	Correlation Coefficients
BEST	102	4301.0588	.4998*
BEST Oral	101	3833.0495	.3244*

* $p < .001$.

The correlations were not significant for the two MTELP tests given to the 29 higher-level university students. These students could and probably should have taken the BEST, but when the research was designed, it was thought that the university and community students should be given different tests. Also, the MTELP had been used in similar research (L. Hansen 1984, L. Hansen-Strain 1987) with high school and university students. As the testing continued, however, it became evident that many lower-level university students would have difficulty with the MTELP, so they were given the BEST. The wide range of BEST scores (BEST: 10 to 76; BEST Oral: 3 to 78) was not evident before the

research with university students took place. These 29 students could not be given an English language ability score and were thus not included in the remaining statistical analysis.

A computation correlating years of U.S. residence with scores on the BEST Oral Interview Section was performed, on the premise that the opportunities to practice English while living in the U.S. could have a positive relationship with English comprehension and speech. The relationship was positive, and significant at .01, but it was a weak relationship at $r = .2728$. This could possibly indicate that social relationships generally tend to stay within the cultural group, and/or that the extended-family living pattern continues in the U.S.

English Language Ability

A single score of English language ability was established for each student. Those who could not read or write English were given a zero for the BEST Literacy Skills Section. The 10 Korean community students who did not have a BEST Oral Interview were given the average score of the 45 Korean community students who did take the BEST Oral Interview and the BEST Literacy Skills Section. The 9 Korean university students who did not have a BEST Oral Interview were given the average score of the 9 Korean university students who did take the BEST Oral Interview Section and the BEST Literacy Skills Section. The 8 Japanese university students who did not have a BEST Oral Interview were given the average score of the 11 Japanese university

students who took the BEST Oral Interview Section and the BEST Literacy Skills Section. The Japanese community students all completed the BEST Oral Interview.

Each subject's scores for the BEST Literacy Skills Section and the BEST Oral Interview Section were then totaled to establish an English Language Ability score (ELA). The data for ELA are shown in Table 17. With a possible score of 159, the highest was 154 and the lowest 3. The mean of the ELA for the 128 subjects (both university and community) who took the BEST was 88.984, the median was 101, and the mode was 100.

TABLE 17

English Language Ability
N = 128

	Mean	Median	Mode	S.D.	S.E.	Skew
ELA	88.984	101.000	100.000	38.929	.3.441	-.824

A Pearson *r* correlation was computed, using the GEFT mean for the 128 students and their ELA scores. The correlation coefficient of .5458 was acceptable for a correlation using a psychological measurement. It was significant at .001. The null hypothesis that there would be no significant relationship of field independence with English language ability is therefore rejected.

A Pearson *r* correlation of ELA scores for the 99 Koreans who took the

BEST with their GEFT mean of 5.768 was significant at .001, with a slightly smaller correlation coefficient of .4552. A similar correlation using the GEFT mean of 12.931 for the 29 Japanese subjects with their ELA mean of 117.069 produced a correlation coefficient of .3873 which was not significant. Correlating the mean GEFT score of 4.926 for the 81 Korean community students with their mean ELA of 73.630 provided a correlation coefficient of .4119, significant at .001. These figures are in Table 18. No correlation was computed for the Japanese community subjects because there were only ten.

Table 18

Field Independence and English Language Ability

Subjects	N	Mean ELA	Mean GEFT	*r*
All Students	128	88.984	7.391	.5458*
Koreans	99	80.758	5.768	.4552*
Japanese	29	117.069	12.931	.3873
Korean Community	81	73.630	4.926	.4119*

*p< .001.

The final Pearson *r* correlation produced a negligible coefficient of .016. There was no significant relationship between years of U.S. residence and ELA scores for 112 subjects for whom data were available for both variables. The mean for years of U.S. residence was 4.706 with a standard deviation of 5.736. The mean for the ELA was 92.084 with a standard deviation of 38.257.

The 16 community students for whom years of U.S. residence data are

missing are all Korean; 12 are FD and 4 are FI. Their mean GEFT was 6.437; their mean years of education 9.125; and their mean age was 39.562.

It is necessary to state the demographics of the 29 higher-level university students who were not included in the statistical analysis because they did not take the BEST, to help understand the multiple regression analysis that follows.

Of those 29 students, 19 are Japanese and 10 are Korean; 23 are FI and 6 are FD. Their mean GEFT score was 14.275; their mean age was 20.137; their mean years of education was 13.310; and their mean years of U.S. residence was 1.404. They were young and most are field independent, their average education included over one year of university work, and they had lived in the U.S. a relatively short time.

Prediction Analysis

Using those variables that had been significantly correlated with field independence for all subjects (age, years of education, and years of U.S. residence) a multiple regression equation was computed to determine the rank and strength of these variables, including field independence, for predicting English language ability as measured by the BEST. However, this computation was performed for only 112 of the 157 subjects, as indicated above. The prediction equation is valid only for the 112 subjects who took it, and does not reflect the significant correlations of the predictor variables for all 157 subjects.

The R^2 coefficients show the cumulative proportion of the overall variance attributable to the four predictor variables, or the percentage of

explanation that each predictor had when added to the others. They are ordered according to their relative importance and they are cumulative. Years of education explained 30% of the ELA scores; years of U.S. residence and years of education together explained 40% of the ELA scores; adding field independence to the other two predictor variables explained 51% of the ELA scores.

The Change R^2 values show the proportion of variance added by each predictor variable. Years of U.S. residence and field independence each added approximately 10%.

Beta scores indicate the simple correlations between each predictor variable and the dependent variable. Years of education was identified as the variable that best predicts the criterion of English language ability, with a beta of .47228 and a significance of .0000. The variable that ranked second, and most improved the first predictor, was years of U.S. residence, with a beta of .46286 and a significance of .0000. Field independence (GEFT scores) ranked third as the variable that most improved the prediction of the first two. Field independence had a beta of .33391 with a significance of .0001. Age again demonstrated an inverse relationship, and ranked last with a -.25836 beta and a significance of .0011.

No one predictor variable indicated great strength; therefore, years of education, years of U.S. residence and field independence probably should be considered together for a more accurate prediction of English language ability. Table 19 presents the multiple regression analysis of these variables.

TABLE 19

Stepwise Multiple Regression Analysis on Relationship Among Four Predictor Variables and ELA Scores for 112 Students

Rank Order	Predictor Variable	Multiple R	R2	Change R2	F	Beta	T	T Significance
1	Years Education	.54909	.30150	.00000	47.48127*	.47228	5.409	.0000
2	Years US Residence	.63312	.40084	.09934	36.46083*	.46286	5.986	.0000
3	Field Independence	.71337	.50890	.10706	37.30417*	.33391	3.972	.0001
4	Age	.74545	.55570	.04680	33.45710*	-.25836	-3.357	.0011

*p< .0000

Chapter 5

Summary and Conclusions

Statement of Purpose

This research assembles and extends the research of the 1980s on the relationship of cognitive styles with second language ability. Its purpose was to measure field independence/dependence and English language ability of Korean and Japanese adults in university and community ESL classes in Anchorage, Alaska, and to record their ages, years of education and years of U.S. residence in order to correlate these findings and compare the four groups (Koreans, Japanese, commmunity and university) and four subgroups (Korean community, Korean university, Japanese community, and Japanese university). The relationships of culture, age, years of education and years of U.S. residence with field independence, and the relationships of age, education, years of U.S. residence, and field independence with ability to learn English as a Second Language could then be established.

Understanding these relationships could help ESL educators better meet the needs of their international adult students, both immigrant and visitor. Specific suggestions are drawn from this study and the research of the 1980s to accommodate different cognitive styles in the classroom.

Research Questions

The questions addressed with this research are: Where do the adult Korean and Japanese ESL students, both university and community, fit on the

field independence/dependence continuum? Is there a difference in the degree of FI/D of Korean and Japanese students? Is there a difference between the FI/D of university students and community students? Are there relationships between field independence and culture, age, years of education, and years of U.S. residence; and if so, what is the extent of these relationships? Is there a relationship between FI and English language ability for adult ESL students? Are years of U.S. residence related to English language ability? If there are relationships, are they significant? How do these variables (field independence, age, years of education, and years of U.S. residence) rank as predictors of English language ability, and what are the strengths of these predictors?

Research Hypothesis

The research hypothesis for this study includes five components: (1) there is a significant difference in the field independence/ dependence of adult Korean and Japanese ESL learners; (2) there is also a significant difference in FI/D between university and community adult ESL Korean and Japanese students; (3) there are significant correlations between field independence and age, years of education, years of U.S. residence, and English language ability for these students; (4) the relationship of cognitive style to years of residence in the U.S. could indicate that those who are field dependent when coming to the U.S. probably do not change their learning style over time; and (5) years of education, field independence, years of U.S. residence and age are predictors

for the criterion of English language ability. This hypothesis was confirmed.

Methodology

The Group Embedded Figures Test was given to all 157 subjects in the study as a measure of FI/D, and data on the other variables (culture, age, years of education, and years of U.S. residence) were recorded. An English test was given at the same time, either the Basic English Skills Test (BEST) or the Michigan Test of English Language Proficiency (MTELP), whichever was appropriate. The BEST Oral Interview Section was given to students individually after the BEST Literacy Section was administered. The Aural MTELP was given to university students as a group.

Data were recorded and then analyzed, using the SPSS/PC. Most of the correlations were significant and positive. Data on years of U.S. residence were not available for 20 of the 157 students in the study, including 16 of the 128 students for whom an ELA score was established. Scores of the 29 higher-level university students who took the MTELP could not be used for the Pearson *r* correlation of field independence and ELA scores, nor for the multiple regression equation.

A multiple regression analysis for 112 of the 157 students determined the rank and strength of four predictor variables (age, years of education, years of U.S. residence and field independence) for predicting the criterion of English language ability, as measured by the BEST.

Summary of Findings

This research tested 157 adult ESL students: 109 Koreans and 48 Japanese. More than half (56.7%) are field dependent as measured by the GEFT. The 72.5% of FD Koreans is much higher than the 20.8% of FD Japanese. The mean GEFT scores for both groups were correlated and the FI/D data given a chi square test for significance. The Koreans are significantly more field dependent than the Japanese.

With far more Koreans (81) than Japanese (10), the community group as a whole proved to be significantly more field dependent than the university group: 73.6% of the community group and 33.3% of the university group are FD. The university group included 28 Koreans and 38 Japanese. Two tests of significance were used, one for the frequencies of FI and FD and one using the mean of the GEFT.

Within the Korean community subgroup, 14 are FI and 67 are FD. The ten subjects in the Japanese community subgroup are FI. Of the 28 Koreans in the university group, 16 are FI and 12 are FD. The Japanese university subgroup had 28 FI and 10 FD subjects.

Demographic data recorded for these subgroups included age, years of education, years of U.S. residence and sex. The Korean community subgroup, with a mean age of 42.0, tended to be older than the Japanese community subgroup with a mean of 37.9. The university subjects were considerably younger; the Korean university subgroup mean was 28.6 years and the Japanese mean was 31.7.

Korean university subjects had the highest mean for years of education, 13.60. In descending order, the others were Japanese university subjects, 13.58 years; Japanese community subjects, 13.10; and Korean community subjects, 8.70. The group with the least formal education, the Korean community subgroup, is also the group with the greatest proportion of FD subjects, 82.7%.

Korean community subjects as a group have resided in the U.S. considerably longer than the other groups. Of the 137 subjects for whom residence data were available, 65 Korean community subjects had a mean of 6.2 years of U.S. residence; 10 Japanese community subjects had a mean of 3.6 years; 27 Korean university subjects had a mean of 2.8, and 35 Japanese university subjects had a mean of 1.5.

Field independence/dependence was correlated two ways with age, years of education, and years of U.S. residence. A chi square test of significance was applied to FI and FD frequencies for those subjects under 35 years of age and those 35 or older, those with less than 12 years of education and those with 12 years or more, those who have lived in the U.S. less than 2 years and those who have lived in the U.S. 2 years or more. All chi square tests for the between-group differences were significant at .0001, except for years of U.S. residence, which was significant at .0003.

A preponderance of field-dependent subjects occurred in three of the statistical groups: those 35 years of age and older (72.4%), those with less than 12 years of education (94.0%), and those that had lived in the U.S. 2 years

or longer (70.3%).

The Pearson *r* correlations of FI/D with the variables were all significant at p< .001. The correlation of age produced an inverse coefficient of -.5164, indicating that those with higher GEFT scores tended to be younger than 35. Years of education yielded a correlation coefficient of .6043, indicating that those with more education had significantly higher GEFT scores. Years of U.S. residence produced an inverse correlation coefficient of -.4867, indicating that those who have lived in the U.S. the longest tend to be FD. Living in the U.S. for several years possibly has not altered the learning styles of these adults.

An English Language Ability (ELA) score was established for each of 128 subjects by combining scores of the Literacy Skills Section and the Oral Interview Section of the BEST. (The 29 university students who took the MTELP instead of the BEST were excluded.) These scores were used in a Pearson *r* correlation with field independence. The resulting coefficient, .5458, was significant at p< .001. Lower coefficients resulted from correlations of field independence and ELA scores for all Koreans, .4552, and for Korean community students, .4119. Both correlations were also significant at p< .001.

After further reducing the total subjects to 112 because of the absence of data on years of U.S. residence for 16 Korean community subjects, a correlation of ELA scores with years in U.S. residence proved insignificant with a negligible coefficient of .016.

Those same 112 scores were used in a multiple regression equation to rank the strength and interaction of four variables (including field

independence) for predicting ELA scores as measured by the BEST. Years of education accounted for 30.1%, years of U.S. residence for 9.9%, and field independence for 10.7%. The three variables together accounted for 50.7% of the explanation for ELA scores.

Conclusions

Anchorage has provided a rich data source for studying the cultural basis of cognitive style and its relationship to learning English as a Second Language, with immigrant and visiting adult foreign students in university and community ESL programs. Korean ESL students indicated that many immigrants live in extended-family groups in Anchorage. Research prior to the 1980s investigating FI/D learning styles and adults learning a second language emphasized middle-class North American university students . More recent research has produced four relevant studies: adult immigrants from 50 countries learning French in a Canadian government program (d'Anglejan and Renaud 1981); university students in Hawaii from the South Pacific islands, Japan, Korea, Republic of China, Peoples Republic of China, Indonesia, Thailand, Vietnam, Hong Kong and the Philippines (L. Hansen-Strain 1987); university students in Illinois from Japan, Spanish-speaking countries, and Arabic-speaking countries (Chapelle and Roberts 1984); and university students in Iowa from Spanish, Indonesian, Arabic and Chinese cultures (Abraham 1985). The Canadian work was the only research to address learning styles of immigrant adults in a non-university second language

program.

This present culture-based study of the cognitive styles of adult second language learners is the first to include adult students in community programs in the U.S., and to study FI/D and English language ability for adults from specific foreign cultures who have immigrated to the U.S. Other FI/D second language studies have grouped foreign students together (e.g., as "international" or "Asian"). Hansen-Strain (1987) indicated the GEFT mean for several different cultures, but then combined them into three "demographic" groups from which samples were taken for statistical analyses. Koreans and Japanese were placed in the same group.

Reporting an investigation of specific cultures, this study adds to the body of knowledge about cognitive styles of international adult language learners in universities; and goes beyond to include foreign-born adult language learners from specific cultures in community programs.

This research has generated extensive descriptive data. For example, findings indicated that an overwhelming proportion (94%) of adult Korean and Japanese subjects with less than 12 years of education are field dependent. Teachers of foreign-born adults in community ESL programs can better meet the needs of their students if they determine the ages, educational backgrounds, length of U.S. residence, and learning styles of their students.

This study focused on the subgroup of Korean community students, because it was markedly different from the others. The Korean community subgroup had the largest number of subjects of any of the subgroups,

constituted slightly over half of the total research population, and contained 89% of all the community subjects. Of the 81 Korean community subjects, 83% are field dependent. This subgroup alone contained older adults. Although the age mode was 31 years, the mean was 42, and 12 subjects were 60 or older. Korean community students had the lowest mean for years of education, 8.7, and 13 people indicated that they had had no formal education at all. This subgroup had lived in the U.S. the longest, with a mean of 6.2 years, and 16 had been U.S. residents from 10 to 28 years. Each of the 16 had a BEST Oral Interview and indicated that they had taken previous English classes, albeit off-and-on, during their U.S. residence. An additional 16 Korean community subjects did not report the length of their U.S. residence.

One interesting relationship determined in this study is the inverse significant correlation (-.4876) between FI/D and years of U.S. residence. Although modest, it indicates that those who have lived in the U.S. longer, primarily the Korean community subjects, tend to be more field dependent. The reasons for this need to be explored to determine, for example, if these adults are inflexible in their cognitive learning styles. No other research was found that correlated FI/D with years of U.S. residence for adult foreign-born ESL students from specific cultures.

This research makes no value judgment about Korean culture or Koreans, but does refer to the traditional Korean extended-family structure with its strong role definition. We can assume that many adult Koreans residing in the U.S. today were reared in families that emphasized respect for family

members and for authority, where the child's place was defined and directed by adults. The younger Korean subjects may have been brought up in less-structured families with more individual freedom in the formative years (Witkin et al. 1977; Ramírez and Castañeda 1974). Cultural change is to be expected as Korea becomes more industrialized. The cognitive styles of adult Koreans may differ considerably in another generation.

This research has implications for university educators, as well as those working with community students. Whereas the 10 Japanese community students are all FI, a surprising 26% of the 38 Japanese university students are FD. With 43% of the Korean university students also FD, it is evident that background data on students regarding the variables in this research can be valuable for university ESL teachers.

The significant correlation of age with field dependence (inverse correlation with FI, with a coefficient of -.5164) supported the information in the GEFT Manual (Witkin et al. 1971). Although d'Anglejan and Renaud included age, education, and field independence among the predictor variables for French language achievement in a multiple regression equation, they did not correlate education with field independence. In this research the correlation coefficient was a significant .6043.

The correlation of FI with English language ability, as measured by the BEST, adds to the body of knowledge of the relationship of adult cognitive styles to learning a second language. The significant coefficient of .5458 indicates a relationship between field independence and learning basic English

skills necessary for everyday living in the U.S. This correlation is similar to or stronger than other correlations reported in the review of the literature for studies concerned with the cultural base of FI/D.

Lower coefficients are acceptable when working with psychological instruments such as the GEFT. For example, L. Hansen-Strain (1987) correlated GEFT scores with six separate measures of English performance. All of her correlations were significant at $p < .001$, but the weakest coefficient was .06 (with dictation) and the strongest correlation (with a cloze test) had a coefficient of .42. Chapelle and Roberts (1984) correlated FI and beginning-of-semester English tests for 61 international university students, with the following coefficients: structure test, .600; cloze test, .555; dictation test, .544; and oral test, .485. These are similar to the .5458 coefficient in the present study. End-of-semester tests usually produced higher coefficients: structure test, .640; cloze test, .600; dictation test, .525; and oral test, .533. Beginning-of-semester TOEFL scores correlated with FI also produced coefficients in the .500 range. However, end-of-semester coefficients were in the .731 to .750 range, indicating a considerable jump in FI relationship to test performance after the teaching of discrete information.

L. Hansen (1984) also found modest, but significant, correlations of field independence with English language measures in South Pacific island high schools, for students ages 15-19. They ranged from .23 for the Michigan Test of English Language Proficiency to .42 for a cloze test. In two research studies of North American university students, correlation of FI/D with Spanish proficiency

measures produced coefficients all in the .20 range, except the cloze tests which were .43 (Hansen and Stansfield 1981, Stansfield and Hansen 1983).

The apparently inconsistent relationship of years of U.S. residence to English language ability is the result of different statistical measures. A neglible Pearson *r* correlation coefficient (.016) depended on the same subjects and the same English language instruments as the multiple regression analysis, which indicated a significant relationship. Multiple regression is complex and considers the influence of each variable on the others as they are ranked. Concepts underlying the two equations are not the same.

The multiple regression prediction in this study of 73 Korean and 29 Japanese subjects ranked years of education first and years of U.S. residence second, with field independence third out of four predictors for English language ability. Field independence had a beta of .33 and added nearly 11% to the first two predictors for English language ability, as measured by the BEST. Age again demonstrated an inverse relationship, with a beta of -.26. It is impossible to compare multiple regression analyses of two studies unless they have exactly the same variables, since the number and variety of the variables change the equation.

None of the predictors was particularly strong (.47, .46, and .33), so they should be considered together as predictors for 51% of English language ability. The individual who has more education, has lived longer in the U.S., and is field independent should perform better on the BEST.

An understanding of these relationships raises a question about the

efficacy of teaching a second language to older, field-dependent adults with limited education. Learning will be slower for older adults - particularly those with little prior education - but incentive measures, realistic goals, and rewards should help.

Adding to the body of culture-based research correlating field independence/dependence in adults with second language learning, this is the first study to work with a large number of adults from specific cultures. It should not be the last.

CHAPTER 6

Recommendations

Research Recommendations

Some of the assumptions of andragogy (adult education) may not apply to field-dependent adults. How self-directed are field-dependent adults and can they move from dependency to increasing self-direction? Are they less effective than field-independent adults at utilizing past experiences in a learning situation? Interviews with FD adults reveal some commonalities and indicate a desire to learn. Those interviewed want to face daily challenges with more confidence, they want better-paying jobs that require English language proficiency, and they want to communicate more effectively with their children who have learned to speak English with ease. Making choices and analytical decisions are more difficult for FD adults and could affect their decision-making about their own learning. Research has indicated that FD persons have a less developed sense of their own identity, e.g. their feelings, needs and abilities (Witkin et al. 1971). Adult educators need to know about the nature of U.S. cultural diversity and its relationship to field-dependent adults.

Abraham's causal-comparative study (1985) carefully researched which method of teaching grammar (participial formation) was more effective for field-dependent individuals. This type of study should to be replicated for other areas of English instruction, and for other aspects of teaching grammar.

Additional research is needed on the relationship of length of U.S. residence with English language learning for field-dependent immigrant adult

students. Large groups of adult students from other cultures, (e.g., Vietnamese, Mexican, and Cuban) who are learning ESL in the United States should be tested for FI/D. This present research raises questions about Brown's theory of language acquisition (1987) and FD adults. He thought that FD could be more important than FI for language acquisition in a natural setting where the second language learners communicate with first language speakers. Interviews conducted for the present research revealed a sense of inadequacy in 14 field-dependent Korean immigrant subjects, married to Americans and still taking English classes ten years or more after coming to the U.S.

Research with a combination of audio-lingual and communicative competence ESL methods for teaching FD adults could indicate a way of providing for individuals who need the structure of one and the social aspects of the other.

Additional culture-based research in FI/D could use the BEST with field-dependent immigrant adults, who are taught the discrete information in the test and re-tested with another form of the BEST (there are three). This could provide more information on FD, especially if recommendations for specific teaching strategies to help field-dependent adults were followed.

Teaching Recommendations

Bringing together the research of the 1980s, this study corroborates the results of that work and assembles specific suggestions for more effective teaching.

Teachers need to understand field independence/dependence and neither exaggerate nor minimize the importance of cognitive style in learning. The manual for the Group Embedded Figures Test (Witkin et al. 1971) indicates that of the three factors of the Wechsler Adult Intelligence Scale (verbal comprehension, attention-concentration, and analytical), FI/D affects only the analytical factor. The abilities of FI individuals on the subtests for verbal-comprehension and attention-concentration are not predictably different from those of FD persons.

Field independence/dependence is a matter of degree. Two researchers (Carter 1988, Moore 1985) designated a "field-center" or "field-neutral" category for the 18 "problem-degree" scale of the GEFT, evidently considering a midrange category more appropriate than either/or for FI/D. Relatively few people scored in the middle range in this present study.

Do all students need to be tested for their learning styles? Ramírez and Castañeda, in Cultural Democracy, Bicognitive Development, and Education (1974), listed the social attributes they found in field-dependent children. These children liked to work with and assist others, and were sensitive to the feelings and opinions of others. They wanted to know about the teacher's personal life, tried to emulate the teacher, and openly demonstrated that they liked the teacher. They wanted a close association with the teacher that included individual guidance and modeling, as well as rewards. They respected authority and were willing to do what the teacher asked.

It appears that adults who are relatively FD continue to exhibit these same social characteristics in the classroom. They rely on "external sources for definition of their attitudes, judgments, sentiments and their views of themselves," and they tend to look at faces - the major source of cues to others' reactions -in search of approval or disapproval (Witkin et al. 1971). This helps explain their desire for a close association with the teacher, as well as their need for rewards.

If a teacher is cognizant of learning styles and of the social construct associated with field dependence, testing should not be necessary. If learning problems are associated with analytical abilities and the social characteristics apply, awareness and the application of teaching methods that assist the FD learner should help.

Abraham's research (1985) demonstrated that inductive lessons are more effective in some areas for FD learners. Specifically proven effective for teaching English grammar, these lessons gave no rules but concentrated on many examples of the principles being taught. The FD subjects of Abraham's research built mental rules step-by-step in the process of learning during the inductive lesson. The 61 subjects were not North American; they came from Spanish, Indonesian, Arabic and Chinese language backgrounds.

Carter's work (1988) included a Spanish language program with inductive procedures designed to focus on understanding and expressing meaning in the second language, utilizing personal interests and activities of the students who worked in pairs and small groups. This scenario has been

proven effective in promoting communicative competence for all learners of ESL (Bowen et al. 1985, Long and Richards 1987). Carter's research was inconclusive concerning the benefits for FD learners in a functional program for university students. The reason could have been the research design or teaching procedures. Field-dependent students profit from social-situation learning and group participation (Witkin et al. 1977, Witkin and Goodenough 1981).

Moore's study (1985) with pictures on videotape reinforces previous research (Witkin et al. 1977) that learning is facilitated for field-dependent adult students if the major visual cues presented in a lesson are completely relevant, because FD students tend to remember the most noticeable cues, relevant or not. Teachers should keep this in mind when using videotapes and other visual aids.

Research indicates that the cloze test should be avoided as a measure of proficiency for field-dependent adults (L. Hansen 1984, L. Hansen-Strain 1987, Hansen and Stansfield 1981, Stansfield and Hansen 1983), although this would not preclude the use of a cloze exercise.

Ambiguity should be minimized in teaching ESL, especially for field-dependent adults (Chapelle and Roberts 1986). Field-dependent students need more precise instructions about how to solve problems, together with an explicit delineation of expected results (Witkin et. al 1977). This suggests that anagrams and similar word games might not be beneficial for second language learners who are field-dependent (Nobel and Frank 1985).

Field-dependent readers should be given more time for reading comprehension. Learning vocabulary in context should be emphasized, and memorizing vocabulary lists avoided (Piotrowski 1984, Cochran and Davis 1987). Piotrowski indicated that FD individuals make more errors on recall. They are not as organized as FI students in the way they categorize and remember.

Field-dependent readers seem to have smaller working memory capacities than FI readers. Cochran and Davis stated:

> It has been hypothesized that rehearsal, chunking, integration, consolidation and long-term memory search processes are among those occurring in working memory . . . and some of these processes would appear to require restructuring ability.

Because of their smaller working memory capacities, FD readers have difficulty in completely integrating textual material. They may use a different, slower process to build and verify an inference, rather than building inferences rapidly during reading and storing them in short-term memory for fast verification, a process that FI learners are thought to use. Field-dependent readers need more time to verify necessary inferences; given time, inferences will be as accurate as those of FI readers (Cochran and Davis 1987).

Lectures should not necessarily be avoided; however, field-dependent students could benefit from an outline presented before a lecture. Frank (1984) suggested that the outline should clearly define the structure of the lecture and could be presented in a handout, by overhead projector, or on the chalkboard.

He felt that FD students could probably benefit from explicit training in the notetaking skills of recognizing primary and secondary relationships, abstracting, and paraphrasing. It should be noted that these are some areas where field-dependent individuals have the greater difficulty, and training in these areas may be relatively unproductive. His study also indicated that FD students take wordier, verbatim (and less efficient) notes, but stated that these notes, useful as external storage of information, are better than no notes at all.

In a community college setting, Martens (1976) found that FD students prefer courses where the teacher follows an outline. The students also wanted a teacher to set the requirements for a course and to let them know exactly what procedures they should follow to meet those requirements. Unstructured situations can be stressful for field-dependent learners; under stress or in situations where they feel threatened, they have more difficulty with recall (Piotrowski 1984). Cognitive styles also apply in test situations, possibly to the detriment of field-dependent students.

On a tenth-grade level, however, one study found that field-dependent students performed better when they competed in the classroom. On the premise that "competition is a socially-based form of extrinsic motivation," this research on reading incorporated grading on a curve. The subjects received reinforcement through comparison with their classmates, and demonstrated significant improvement with this type of social stimulation (Bolocofsky 1980). Testing occured twice a week. More research is necessary to determine if grading on the curve reduces stress and if this is effective with FD adults.

Williams (1985) discovered in a study of undergraduates in a writing course that field-dependent individuals tend to have more difficulty with coherence and abstracting. It was also revealed that there was no relationship between IQ and coherence, nor between IQ and cognitive style. Williams indicated that cognitive style should not be confused with IQ.

Doebler and Eicke (1979) found that fifth-grade teachers' awareness of their pupils' cognitive styles produced significantly improved self-concepts and feelings about school for the field-dependent students. These teachers had attended a workshop on field independence/dependence. Reseach is needed to determine if FD adults respond in the same way.

There are assets in working with adults who are field-dependent. The social construct (Witkin et al. 1971, Ramírez and Castañeda 1974) indicates that they usually are cooperative and friendly, and can form a personal and rewarding relationship with a teacher.

Teachers of English as a Second Language need to be aware of field dependence and the areas where FD adults could have difficulty. Research suggests that teachers incorporate the following strategies to facilitate learning for field-dependent adults:

1. Provide structure for learning tasks.
2. Use small-group work in social situations.
3. Make visual cues directly relevant to lesson materials.
4. Provide students with outlines at the beginning of a lecture.

5. Clearly define the learning expected to take place and explain the teaching procedures to be used.
6. Help learners understand exactly what they must do to attain that learning.
7. Give positive verbal reinforcement as a reward.
8. Try an inductive grammar lesson.
9. Avoid cloze tests and stressful testing situations, although friendly competition might be indicated.
10. Teach vocabulary in context.

This study and the body of research from the 1980s indicate that field dependence should not be ignored. It must be addressed in ESL methods textbooks and it needs considerably more research. The teaching of adults in both university and non-university ESL programs continues with little attention given to the special needs of field-dependent students, except for those intuitive teachers who sense the problem but often lack knowledge on which to act. Field dependence is not discussed in adult education textbooks. ESL textbooks have little information about field-dependent learners; there is seldom more than a paragraph, if anything, and adult learners are often not mentioned. Some multicultural teaching-method textbooks mention field-dependent learners, but usually only in the context of teaching children. What is more multicultural than an ESL classroom?

The United States is the most culturally diverse nation in the world. This research has identified a large group of adult learners of English as a Second Language in the U.S. who are primarily field dependent. There are undoubtedly other groups of field-dependent adult language learners in this country. We must identify them, respect their cultural origins, evaluate our teaching methods, develop appropriate instructional materials, and teach more effectively.

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